

CLAIMS:

1. A method of handling datagrams in a network device coupled to other network devices, said method comprising:

receiving an incoming datagram at a port of the network device;

determining an egress port for the incoming datagram based on a destination

5 address contained in the incoming datagram and a lookup of an address resolution
lookup (ARL) table;

performing a lookup of the ARL table based on a source address contained in
the incoming datagram to determine whether the source address has been learned
previously;

10 writing an entry into the ARL table when the source address has not been
learned previously;

determining whether the other network devices have learned the source address
when the source address has been learned previously; and

continuing to relay a learning message with the source address to the other

15 network devices when it is determined that the other network devices have not learned
the source address.

2. A method as recited in claim 1, wherein the method further comprises
updating a hit bit in the ARL table when the source address has been learned
previously.

3. A method as recited in claim 1, wherein the step of determining whether the
other network devices have learned the source address comprises examining a learned

all devices tag for the source address in the ARL table.

4. A method as recited in claim 1, wherein the network device and the other network devices are connected through a ringed connection and the step of continuing to relay a learning message comprises continuing to relay a learning message through the ringed connection.
5. A method as recited in claim 4, wherein the method steps are also performed in the other network devices.
6. A method as recited in claim 4, wherein the step of determining an egress port comprises flooding all ports of the network device with the incoming datagram when the lookup of the ARL table does not find a match with the destination address.
7. A method as recited in claim 1, wherein the step of receiving an incoming datagram comprises receiving an incoming data packet.
8. A network device coupled to other network devices for handling datagrams comprising:
 - a plurality of ports for receiving an incoming datagram;
 - an address resolution lookup (ARL) table;5 means for determining an egress port for the incoming datagram based on a destination address contained in the incoming datagram;
 - lookup means for performing a lookup of the ARL table based on a source address contained in the incoming datagram to determine whether the source address

has been learned previously;

10 writing means for writing an entry into the ARL table when the source address has not been learned previously;

 determining means for determining whether the other network devices have learned the source address when the source address has been learned previously; and

 relaying means for relaying a learning message with the source address to the

15 other network devices when it is determined that the other network devices have not learned the source address.

9. A network device as recited in claim 8, further comprising updating means for updating a hit bit in the ARL table when the source address has been learned previously.

10. A network device as recited in claim 8, wherein the determining means comprises examining means for examining a learned all devices tag for the source address in the ARL table.

11. A network device as recited in claim 8, wherein the network device and the other network devices are connected through a ringed connection and relaying means comprises ring relaying means for relaying a learning message through the ringed connection.

12. A network device as recited in claim 8, wherein the network device is connected to the other network devices through one of a stacking port and an expansion port of the network device.

13. A network device as recited in claim 8, wherein the means for determining an egress port comprises flooding means for flooding all ports of the network device with the incoming datagram when the lookup of the ARL table does not find a match with the destination address.

14. A network device coupled to other network devices for handling datagrams comprising:

a plurality of ports for receiving an incoming datagram;

an address resolution lookup (ARL) table;

5 an egress port determiner for determining an egress port for the incoming datagram based on a destination address contained in the incoming datagram;

an ARL table reader for performing a lookup of the ARL table based on a source address contained in the incoming datagram to determine whether the source address has been learned previously;

10 an ARL table writer for writing an entry into the ARL table when the source address has not been learned previously;

a global address determiner for determining whether the other network devices have learned the source address when the source address has been learned previously; and

15 a learning message forwarder for relaying a learning message with the source address to the other network devices when it is determined that the other network devices have not learned the source address.

15. A network device as recited in claim 14, further comprising an updater for

updating a hit bit in the ARL table when the source address has been learned previously.

16. A network device as recited in claim 14, wherein the global address determiner comprises an examiner for examining a learned all devices tag for the source address in the ARL table.

17. A network device as recited in claim 14, wherein the network device and the other network devices are connected through a ringed connection and the learning message forwarder comprises ring message forwarder for relaying a learning message through the ringed connection.

18. A network device as recited in claim 14, wherein the network device is connected to the other network devices through one of a stacking port and an expansion port of the network device.

19. A network device as recited in claim 14, wherein egress port determiner comprises a port flooder for flooding all ports of the network device with the incoming datagram when the lookup of the ARL table does not find a match with the destination address.